

THE FUNCTIONING OF FEDERAL AID IN THE
DEVELOPMENT OF HIGHWAY TRANSPORTATION.

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In the State of Arizona there is a mine in operation today producing copper from an extremely low grade ore. So small is the percentage of metal that at current prices, a fraction of the price of only two or three years ago, about sixteen tons of ore must be handled per day for each man upon the payroll to make the business pay. Further the ore is not worked in the open but mined and lifted from the six-hundred foot level. It is said that sixteen million dollars were expended to develop and equip this mine before any metal was produced. Here is found mechanical efficiency but the enterprise was founded, not on efficiency, but on imagination and courage.

It is becoming more and more apparent that this nation faces the future more seriously in need of efficiency than has ever been our need in the past and real efficiency can only come as a product of imagination and courage. Contemplate, if you please, the lowered standard of living and the desperate economic conditions with which the people of many other nations are contending, then picture the great big major fact that this nation must be forced into economic competition with these nations. If we succeed in holding and retain the hope of improving the standard of living of our agricultural population, the stronghold of this country, it will only be through the exercise of imagination and courage to gain efficiency of operation as essential to

a nation as to a private business.

The annual loss due to the lack, or to the high cost of transportation imposes upon the business of this country a waste out of all proportion to the cost of remedying the conditions. But it cannot be said that we are today attacking, with the imagination and courage necessary, any one of the fundamental conditions which must be met if we are to have adequate and economical transportation; and by transportation I do not mean railway or highway or waterway transportation alone, but transportation in which all three of these shall meet and each shall serve that purpose which it is best designed to serve, and each shall supplement the other.

Just at this time it is impossible to pass without comment the results of many recent elections. These can only be interpreted as an expression of an economic hurt and resentment which are the outgrowth of the readjustment period through which we are passing. The road problem has been an issue in a number of States. As the returns have come in there has been presented the anomaly of a demand for lower taxes and curtailed expenditures for roads, and at the same time the approval of additional bond issues which can only be met through increased revenues; these happening in the same State and at the same election. In some instances there is grave doubt as to the economic justification of the highways for which provision was made.

It is certainly not apparent that a reaction against the highway improvement program has been expressed, but rather that a very strong reaction has been voiced against the present

economic conditions. In some States there has been more or less pointing to the high cost of the road program as a reason for discontent. The need for long mileages and higher types of highways has developed so rapidly that it has forced the highway officials of the country out in front of the foremost advance of public sentiment, there to become a common target for both the progressive and the conservative elements of our population, speaking not of political parties, but rather of the two general groups into which people divide themselves, based upon their natural reactions to all public improvements. The one element is impatient because of too slow progress, - the other dissatisfied because, first, the improvements are not in the right localities, or second, the wrong political party is receiving credit, or third, the cost is too high. Eliminate these latter contentions, and at least ninety per cent of all opposition to the highway program of any State is dissipated to the four winds.

Under the existing conditions, I am glad to have the opportunity to express here the admiration which I feel for the deep-seated loyalty, honesty, and devotion to the public service, of the men serving in the capacity of highway officials all over these United States. To know and to believe in these men, as it is my privilege, strengthens my belief in the continued progress of this nation. And I am confident that the dissatisfaction expressed at the polls has not been directed against any of these men, but against economic conditions. We know that, for conditions to grow better, our transportation has to grow better. It is not the only thing that has to be different.

There are other readjustments necessary but this is one of the essentials and, on the whole, highway transportation is a major not a minor factor.

The building of highways as an integral and necessary part of highway transportation service, is a serious and a responsible undertaking, and there seems to me to be evidence in plenty that, generally speaking, our highway officials are rising to the needs of the times. But their work must become more certain, and must be directed toward objectives that are better understood if the public is to succeed in building for itself a system of highways that will not fail. Not only is this true, but their work must be directed by those requirements which may be termed fundamental principles underlying the whole structure of transportation in its highway phase. Can we not, out of the experience of the past, - out of the development of railway transportation and the condition in which it finds itself today, - secure the necessary information and guidance that the development of our highway system shall go forward economically and efficiently?

Permit me to quote recent testimony from the railroads themselves. Mr. Markham, the President of the Illinois Central Railroad, in New York on November 9 said, in speaking of the complaints which exist with reference to the present lack of rail transportation:

"Some are without justification, but they reflect a nation-wide condition, the existence of which cannot be questioned. There have been other times when the service the railways could render has been unequal to the demands. This was the case, for

example, in 1906 and 1907, and in the war years. But in every past time when there was a shortage of transportation, it was felt only after the revival and increase of business had been going on for some time, and had carried production and commerce to higher levels than ever before. What we call 'car shortages' always have represented inadequacy of all railroad facilities. The car shortages of 1906 and 1907 did not come until toward the close of a 10-year period of industrial and commercial expansion, during which the railways had increased by two and one-half times the volume of freight carried by them. The car shortage of the war years did not begin until when, in 1916, the railways were handling twenty per cent more freight than in the previous year.

"The outstanding fact regarding the present shortage of transportation - the significant fact which challenges our attention - is that it has been met at the very beginning of a period of business revival. In this respect it creates a situation unprecedented in the history of the United States - a situation which should cause every farmer and business man, every railway regulating official, every public man, every wage worker, to pause and reflect seriously.

"Nothing less than a revolution has occurred when our railways, whose surplus capacity has always in the past periods of business made possible the vast increases which have occurred in our production and commerce, are found threatening to prove unequal, or actually proving unequal, to the demands made upon them at the very beginning of a period of business revival. The railways are now moving about as much freight weekly as in 1920 when the highest record was made. In spite of this, the

car shortage recently reported has been the largest ever known, and the demands of shippers continue to increase. In past periods of business revival, the increase in freight business has gone on until it has reached a point 35 to 150 per cent higher than ever before. We may well ask ourselves whether, with the railways finding it difficult to surpass the freight carrying record of 1920, they can be expected within a few months or years to handle such an increase in tonnage as past experience shows would be only normal in a period of general revival."

This frank recognition and statement of a condition from this high railway source carries the weight of conviction that, under no conditions, can the highways escape an additional burden of transportation which will be thrown upon them, due to the overflow from the railways. It cannot be otherwise. And while the rate of increase in the past has been enormous, we must conclude that this increase is to continue and to become more acute because, as the railways fail to carry the increased business which must be a part of and necessary to business revival, cost will cease to be a governing factor, and the time of the service become the one essential.

But we are not highway officials alone. We are officers of the government of the States and of the United States. It is our duty to undertake the responsibility of helping to work out this transportation situation.

We have had recently in the statement of Mr. Lyford, Vice President of the C. & E. I. Railway, for the first time, an

expression of constructive ideas as well as specific facts which indicate something of the supplementary relationships which can be established between the highways and the railways. He says:

"Under existing rates the line haul of freight would be highly profitable if the revenue therefrom were not absorbed by constantly increasing terminal charges."

And among the five specific evils which assist to prey upon the earnings of the line haul of the railways, three are as follows:

"The lack of organized collection and delivery service, making necessary unreasonably large and expensive freight terminal facilities, and an unreasonably large supply of freight cars."

As a specific example he recites the fact that the interest charges alone upon the value of the real estate of the freight warehouse in Chicago at 12th Street impose a charge of \$2.50 per ton for every ton of freight which passes through that warehouse.

"Second, the use of box cars for transfer of l. c. l. freight between railway stations and large terminal areas, a service which the trucker could perform more quickly and economically, thereby releasing box cars from an unprofitable service, and increasing the carrying capacity of the railways.

"And third, the operation of branch lines on which traffic is too light to sustain the rail operation, - a service which the motor truck can perform better and at less expense."

All of these specific remedies call for adequate highways, either urban or suburban. Further he states:

"If all of the freight cars which carry loads into the Port of New York, the switching district of New York, and other large terminal areas, could be unloaded on the day of their arrival, they could be loaded out on the same day or the following day, and the present freight-car equipment of the railways would be sufficient to meet all transportation needs for several years to come."

And yet we have believed that we must add greater and greater equipment necessitating higher charges. It seems to me the time has come to use economy in the use of our present investment in railway and highway equipment to the end that we will not build up further interest charges.

Further he states:

"Competition for the local carriage of goods within city and suburban areas ought to be welcome by the railways, as they perform this service at an actual loss, while the trucker can perform it at a profit. On the other hand, competition with the railway for the carriage of goods through the rural districts along the main lines of railway is harmful to the railway and unprofitable to the trucker."

Here are briefly, perhaps inadequately sketched certain phases of the transportation problem which are to be met. It is about time that we recognize in this country the fact that the development of adequate highways is not a problem for the farmer, nor is it a problem alone for the city man. It is one of the fundamental transportation problems in every locality, and the use of the roads in every locality will reflect the life and

activities of the people in the locality. This is demonstrated beyond dispute by the traffic census which we are now carrying forward. Despite any conditions political or otherwise, highway improvement in this country must go forward on an increased scale because it will cost more to do without the transportation service which can be supplied through the building of highways than it will cost to build and maintain them.

Here is an example taken from an industrial section. The recent traffic counts in Connecticut and Massachusetts, taken in October which is an average traffic month give an average for each of four stations of 1140 tons of commodities per day of nine hours. Adding one third as a very conservative estimate for the full day, we have 1520 gross tons daily commodity movement, that is, the weight of the commodity and the carrying vehicle.

Summary Table of Commodity Movement
Connecticut and Massachusetts.

Class of Commodity	Average Haul Miles	Total Net Weight Tons	Percentage Total Net Weight	Ton Miles Net Weight	Gross Weight Tons
Products of Agriculture	34.5	1,094.6	8.7	39,802	2,630
Products of Animals	39.4	1,216.1	9.6	48,113	3,121
Products of Mines	25.6	669.0	5.4	17,328	1,288
Products of Forests	35.2	419.6	3.3	13,970	1,017
Products of Manufacture	49.0	9,151.9	73.0	411,611	23,225
TOTALS		12,551.2	100.0	530,824	31,280

The agricultural tonnage is not large, neither is that of a number of the other activities, but the manufacturing tonnage is the big and important item. The section is devoted largely to manufacturing, and we find reflected the life and activities of the section in the highway commodity movements. Seventy-three per cent of the commodity movement consists of the products of manufacture, the balance being divided between the products of agriculture, mines and forests. From figures which have been published by the Iowa Experiment Station, assuming gasoline to cost 24 cents per gallon, the cost of the fuel alone for moving this tonnage per mile per day would be \$26.44 over an ordinary dirt road, assuming the impossible, that such traffic could be carried over a dirt road. The cost of fuel for moving the same tonnage over a paved road would be \$11.70, a difference of \$14.74 per day. On the basis of 300 days per year the actual saving in fuel alone moving this tonnage, which comes from the actual weighing of the actual movements, would be \$4,022.00. The paved highway costs approximately \$40,000. The average interest at 5% would be \$1,000, which, deducted from the actual saving on fuel, would leave a balance which would retire the cost of the road in a little over 11 years. The maintenance costs are not figured in either case, but a greater maintenance charge could be deducted than the roads are actually costing, and still the balance of the saving would be sufficient to retire the cost within what we believe to be a reasonable period for the service of the road without extensive repairs.

Here are the astonishing figures of the cost of an improved highway constructed at prices which are above what we believe will

be the general average of such costs, and the saving in the fuel consumption alone is sufficient to pay the cost of the highway plus interest charges plus maintenance, and the tremendous passenger traffic is carried, on this basis, free of cost.

Individually the cost is not distributed on the basis of commodity hauling, but the public as a whole, through its saving in fuel alone is enabled to build highways of the type demanded, and the very large saving on passenger traffic can be entirely neglected. Similar assumptions could be recited for other parts of the country, and in each case the cost of highway improvement would justify itself provided the roads are designed for the traffic of that community and the traffic units which they ought to bear.

Here, then, is the functioning of Federal-aid in the development of highway transportation. The Bureau of Public Roads is an agency. It is an agency representing all of the State highway departments, and attempting to enforce the average ideals and standards which are the general average of the experience and the practices in the States which are making the best progress, and these standards are not such that they impose unjust or unnecessary restrictions or requirements on any State in the construction of the Federal-aid highways.

The principles which are being administered are not the standards of one State, but rather the average standards, and it would be manifestly unfair to those States which are standing for the progressive and proper development of their highways to meet their transportation necessities, not to insist that all of the States shall come up to a reasonably uniform standard considering

the States by groups. The Bureau has no apologies to make for insisting on standards which have been developed through this experience. There is no question that the States should be considered in groups, and the standards of one group should not, and in many cases cannot be applied in other groups, but within the group itself. While the Bureau has full sympathy for any retarding condition in which a State finds itself with respect to funds, its organization, or its own laws, the Bureau would be open to the most just criticism should it allow that State to fall below the standards of the area in which the conditions are common and continue to participate in the Federal road funds. The Bureau is earnestly endeavoring to define the areas in which like conditions prevail and to place justly the States in these areas. So far as is possible only those standards which are necessary to the development of the transportation needs of the area will be insisted upon, but there is little sympathy for a State which lags for years behind the other States in any group. It would not be a kindness, and it would only result in detriment to the progress of highway development in this country as a whole, to condone or fail to enforce in any State the standards that are agreed upon as necessary to the group. This position seeks only to express the experience and view point of the majority of the States - the foundation principle upon which this government was built, and upon which all our institutions have been developed. It is only the application of the theory which underlies our whole form of government.

It is not my wish to dwell in detail upon any particular policies. There are certain requirements which are fundamental -

the location, alignment, and gradients of our highways are the most permanent parts. This axiom has been repeated over and over and yet the Bureau is confronted, time after time, with requests to approve projects which violate these requirements without regard for the perpetuation of bad highway standards for generation after generation into the future.

I cannot express too strongly my appreciation of the cooperation which has been received from the States without exception, in putting into operation the Federal Highway Act of November, 1921, which imposed many restrictions and requirements which had not previously existed.

There have been two questions involving the design of highways for which it has been difficult to establish proper policies. The first of these was met by the establishment of the policy of stage construction, and the second was met by the establishment of the policy of classifying railroad crossings in the order of their relative importance for elimination or improvement.

Stage construction has not been developed as a plan to accept on faith the fulfillment of promises which neither the past performance or the present indications show that the State contemplates. Rather it is a plan to assist the State that intends to improve its Federal highway system adequately, and has established methods of financing or of producing revenues that will in a reasonable time complete the improvement by stages. The adoption of stage construction cannot nullify the provision of law requiring maintenance. It is axiomatic therefore that, if the maintenance funds are inadequate, the Bureau must require

construction that can be maintained within funds available.

The cheapest railroad crossing improvement is the elimination of grade intersections through relocation. This whole question, moreover, is one which ought to lie heavily on the conscience of every highway official. The Bureau has been frequently accused in the past of holding up the States' programs because of refusal to approve projects having grade crossings. There is no safe grade crossing. Some are relatively less dangerous than others. The man who insists on carrying main highways across main line railways at grade is making headway with his program at the cost of human lives.

In summary, then, it is apparent there is the greatest need for the exercise of courage and imagination in meeting the problems of highway administration and improvement which are ahead. There is the need for a vision of the future encompassing all that the development of a perfected system of highway transportation can mean to this country. The plans must be matured and policies enforced at this time when the whole public is suffering an economic hurt. There must come the correlation of the system of highway transportation with other transportation systems, and particularly must the highways take over the burden which the railways now carry only with loss, as evidenced by the testimony of the railroads themselves.

Federal-aid is functioning in a major way to accomplish these larger purposes by fixing our efforts for the time upon the completion of the Federal-aid highway system. It is requiring, and must in the future be more strict in requiring, that the States shall maintain adequate highway departments. The application of

Federal-aid has proved to be sufficiently flexible to adapt itself to the needs of the different States, and to be readily adjusted to the character of highway development needed in the metropolitan areas as well as in the strictly rural sections of the country.

In requiring adequate maintenance the Bureau seeks only to secure the maximum of highway service and to protect the investment without which our highway program cannot continue to receive the support of the public. The Bureau seeks only those fundamental requirements of location, alignment, and freedom from railroad grade crossings that are essential to the upbuilding of an adequate highway system. This fact must never be lost sight of, that as the present stretches of highways are connected by the building of the intervening sections, the traffic over the individual highways will become greater until it reaches a point of stability which will only be changed by the completion of new routes in contiguous territory, so that not only freedom from danger is sought, but economy and continuity of operation are essential requirements.

Finally, the Bureau does not attempt to dictate the highway policies of the several States, but rather to reflect the standards and policies which a majority of the State highway departments are using, developed out of experience and the expenditure of large sums of money, as necessary and essential to the proper development of the highway systems within the individual States. In the administration of the whole of the Federal-aid work, the Bureau attempts to give each State the benefit of the best thought upon all its problems, drawing upon one State for ideas that will be helpful to another, and extending to all alike a coordinating service through which it is hopeful that all States may be brought to a higher level of efficiency and attainment.